GRINDING CONCRETE

(THE HOWS AND WHYS)

(WALLS, COLUMNS, HIGHWAY STRUCTURES, PRESTRESSED BEAMS FLOORS, CEILINGS)

FOR DETAILED CATALOG INFORMATION ON GRINDERS, CEILING GRINDERS AND ACCESSORIES SEE CAT. 660

Architects' specifications during recent years have been calling more and more for finely finished concrete surfaces on walls, columns, highway structures, prestressed beams, floors and ceilings. To meet the needs of contractors, Stow has developed special grinding equipment that will finish hardened concrete surfaces quickly and effectively.

This pamphlet gives information on the proper equipment and its uses, speeds, and accessories required.

GRINDING WALLS

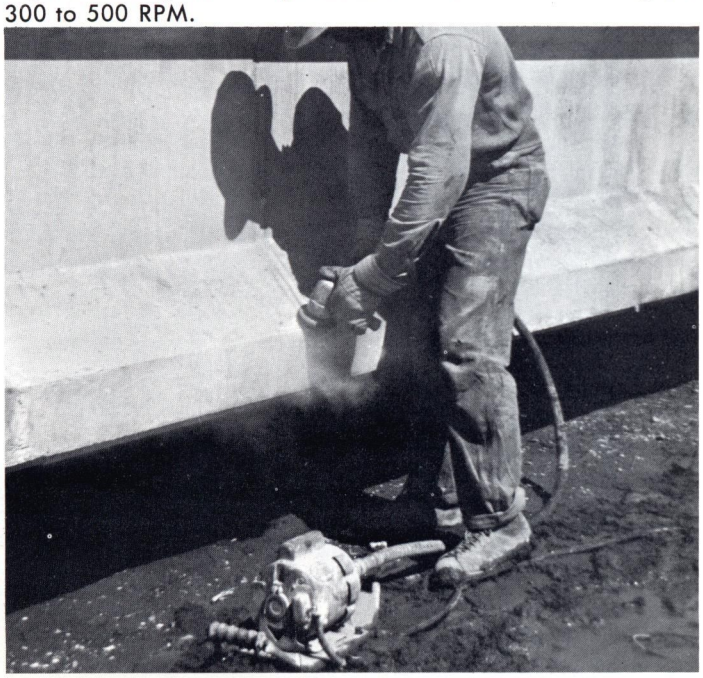
There are two methods used to smooth off hardened concrete walls. One is known as "wet rubbing": green concrete is smoothed to a plaster-like finish by a slow speed grinding wheel or disc while water is applied to the surface. The other method is "dry grinding": dry concrete is smoothed by a high speed grinding wheel or abrasive disc. High speed dry grinding should not be done on green concrete as the wheel or disc will gouge the surface and also throw the grout.

A. WET RUBBING—Wet rubbing is done shortly after the forms are removed to fill in voids and remove form marks. It is done with a portable machine using an abrasive cup grinding wheel—4½" or 6" in diameter, or an abrasive disc —7" or 9" in diameter. The grinding wheel or disc is used with a "wet" right angle head which is provided with an attachment so that water runs through the center of the wheel or disc onto the concrete when the operator pushes a button. A pressure tank can be used for the water supply. The water, plus the rubbing action, brings a wet cement paste up to the surface of the concrete. The surface is then rubbed into air pockets. This results in a very smooth surface. When the concrete is too dry for wet rubbing, wet cement, with low slump and fine aggregate, can be painted on with a brush and then worked in with the grinding wheel.

Wet angle heads are available in a speed ratio of 10:1 reduction for connecting to grinding machines.

Model JT-50A is an electric machine, and model JG-50 has a gasoline engine. The speeds desirable for wet rubbing are 300 to 500 RPM.

WET RUBBING WITH JT-50A



DRY GRINDING WITH STOWFLEX DISC.

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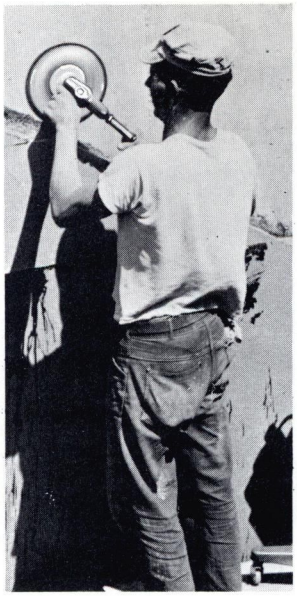


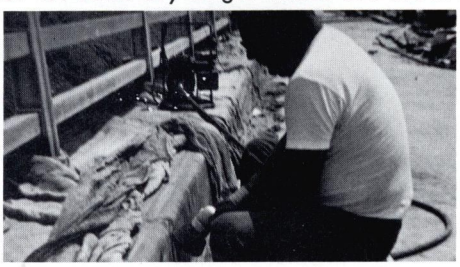
DRY GRINDING WITH STOWFLEX DISC

WET RUBBING BRIDGE RAILS

WET RUBBING PRESTRESSED BEAM

B. DRY GRINDING

Dry grinding is done on dry concrete to remove fins and marks caused by forms. This can be done with abrasive grinding wheels, cup grinding wheels or abrasive discs, used on either a JT-50A or JG-50 grinder, handpieces or 1:1 ratio dry angle heads are used.



DRY GRINDING WITH STOW JG-50

C. ATTACHMENTS

Here are the attachments for both wet and dry grinding which are available from Stow:

1. STOW SPEED-CUT CUP WHEEL (Size 6") — This new cup wheel of Silicon Carbide Grain with a resin bond is designed specifically for finishing concrete and can be used for either wet rubbing or dry grinding. The SPEED-CUT wheel can be used on Stow grinders or electric tools and air tools at speeds up to 6,000 RPM. This 2⅜" thick wheel has 10% more grinding area and 94% more usable grinding material than conventional wheels. Also, lower priced tapered speed-cut cup wheel available (6" x 4¾").

2. STOWCUT ABRASIVE DISC (Sizes 7" and 9") — RECOMMENDED PRIMARILY FOR WET RUBBING. This is a newly developed disc recommended for wet rubbing concrete. 30 per cent lighter than the cup wheel, the Stowcut Disc combines the long wearing characteristics of the cup wheel with the lightness, adaptability, and wide surface contact of the coated abrasive disc. The Stowcut Disc is made with a depressed center and is attached with an adapter and back up pad (No. 7629) to a Stow angle head or handpiece. (When used with handpiece, adapter No. 6123-1 is also needed.) Best running speed is 300 to 500 RPM for wet rubbing. The Stowcut Disc should not be used for edge cutting. It should be applied at an angle approximately 5° from the flat surface, using only the pressure created by the weight of the machine.

3. STOWFLEX ABRASIVE DISC (Sizes 7" and 9") — RECOMMENDED PRIMARILY FOR DRY GRINDING. This disc is very popular in the field. It is composed of laminations of cotton fibrous material impregnated with a silicon carbide abrasive and bonded with resin under pressure. This disc is very light and easy to handle, excellent for removing fins and other form imperfections. Proper running speed is 3,000 to 4,000 RPM. It should be applied at an angle of about 30° to 40°, using only the pressure created by the weight of the machine.

4. GENERAL PURPOSE ABRASIVE CUP WHEEL (Sizes 4½" and 6") — Can be used for wet rubbing as well as dry grinding. Has a maximum speed of 3,600 RPM.

5. ABRASIVE GRINDING WHEEL (Sizes 4" and 6") — Can be used for general grinding at speeds from 3,000 to 4,000 RPM. This must be used with a wheel arbor when attached to either a handpiece (wheel arbor No. 6972-501) or an angle head (wheel arbor No. 6028-501).

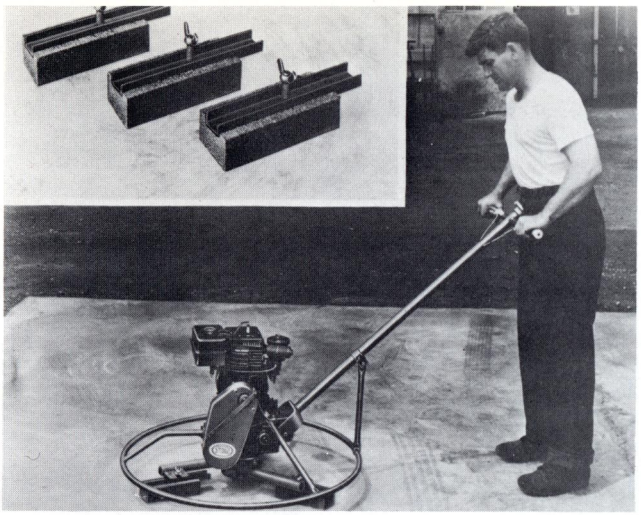
6. WIRE BRUSHES — Different sized wire cup brushes and knot sectional wire brushes are available for cleaning and removing paint. The most desirable speed for this operation seems to be 1,700 RPM.

7. SCALING — A scaler attachment is available for scaling paint off concrete, or for reconditioning old or roughened concrete that is to be refinished. Up to ½ inch or more of concrete surface can be taken off with the Stow scaler and is often much faster than sand blasting.

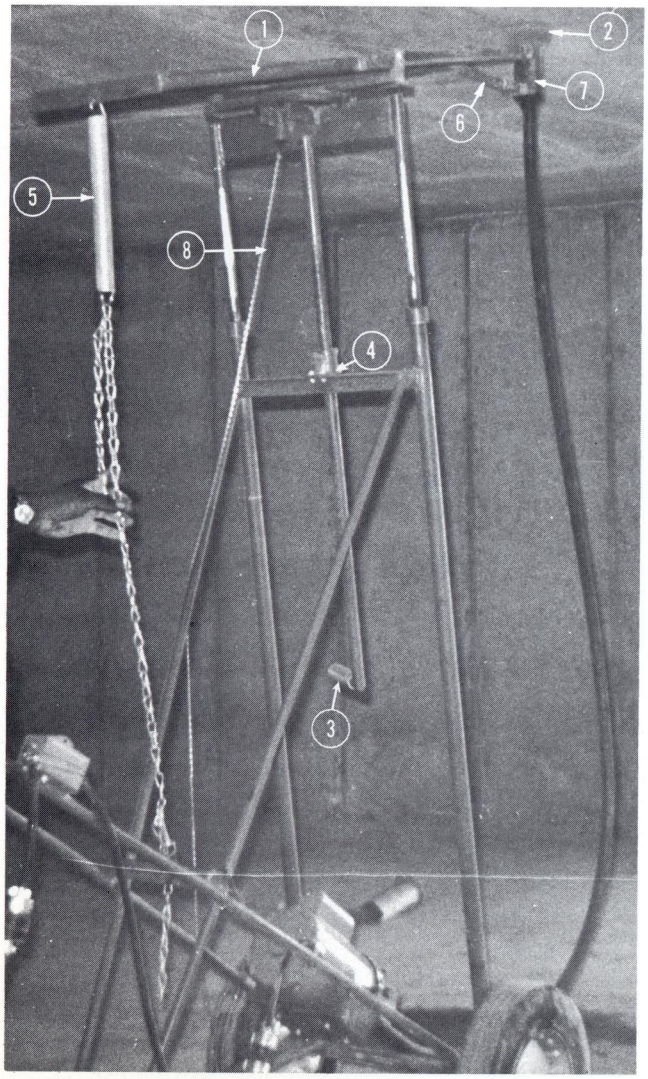
GRINDING PRESTRESSED BEAMS

The exposed surface of prestressed beams are being finished to fill in pits and voids or remove form marks resulting in a smoother surface. Sometimes wet rubbing is done by "sacking" — that is dipping burlap in wet cement and spreading it on the surface. Then a slow-speed angle head and cup wheel are used to rub the grout into the voids. If the voids are small, it may not be necessary to sack. If the concrete is cured and dry, dry grinding with a Speed-Cut wheel or Stowflex disc will remove form marks. One contractor reported saving $20.00 a beam using a Stow grinder and wet angle head over rubbing by hand.

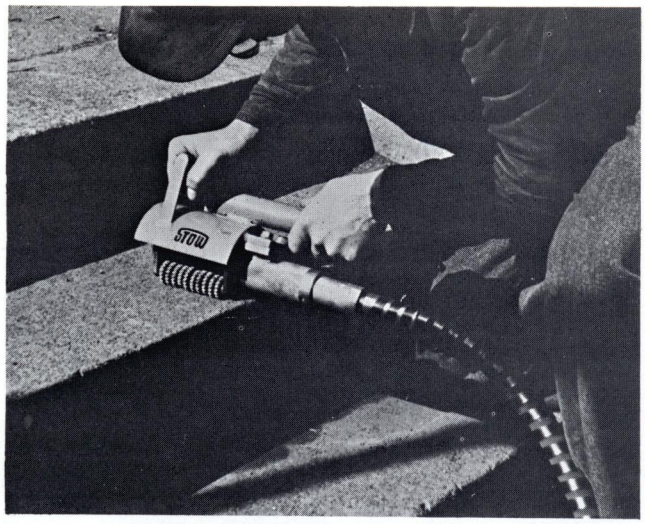
GRINDING FLOORS



Grinding concrete floors is done to obtain an extra fine finish on a slab after it has been troweled. Also, high spots or seams between slabs are removed by grinding. When slabs must be troweled in the rain, the only way to achieve the proper finish is by grinding. For this type of grinding, substitute grinding blocks for the blades on Stow's 3- or 4-bladed, 34-inch Roto-Trowel. The grinding blocks fasten on with a thumb screw. Each abrasive block is 20 grit and has a threaded stud and thumb screw attached. The machine should be throttled down to a low speed and water applied to the concrete.



SCALING



For removing hardened concrete of up to ½" thick, the Stow Scaler provides an ideal chipping tool. Can be used for removing paint and dirt from concrete. Also used on Stow Grinders.

GRINDING CEILINGS

Ceilings are dry-ground to remove form marks leaving a smooth finished surface. Although one of Stow's portable grinders can be used, the Stow CG Ceiling Grinder is ideal for a job of any size. This machine is furnished complete with a 9" Stowflex disc. On a typical job the CG Ceiling Grinder will finish 500 square feet an hour simply by pushing the machine back and forth like a baby carriage. (Naturally, the speed depends on the condition of the surface such as the number and thickness of the fins.)

For ordinary grinding, the disc should be flat against the ceiling, but for cutting nails and removing fins it works better at a slight angle. Often, after the fins are cut off, the surface is given a final finish by grinding the surface with the Stow Speed-Cut wheel substituted for the Stowflex disc with the wheel flat against the surface.

Three models are available: CG-10 handles ceilings from 7½ to 11 ft. 3" high; CG-13 covers ceilings 10 ft. to 14 ft. 3" high; and the CG-18 covers ceilings from 9 ft. 2" to 18 ft. high.

To Operate:

A. The operator sets the pivot arm (1) at about a 45° angle.

B. He then adjusts the 9" Stowflex grinding disc (or grinding wheel) (2) to the proper height by lifting up on handle in the center (3). A ratchet arrangement (4) automatically locks it in position at the desired height.

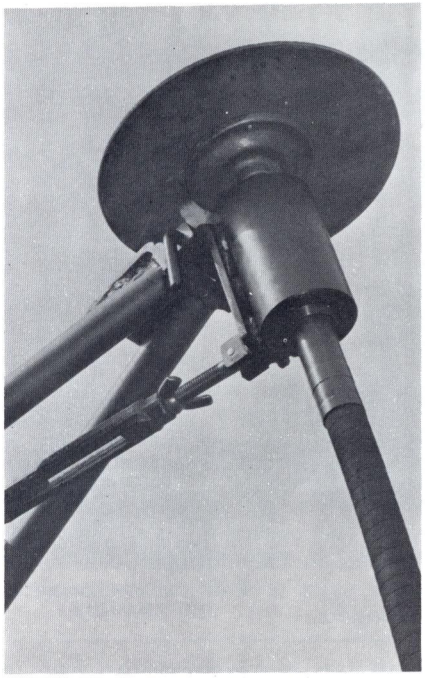
C. A slight pressure is put on the grinding disc by the spring and chain assembly (5) at the opposite end of the pivot arm.

D. A turnbuckle (6) is used to get the most desirable grinding angle.

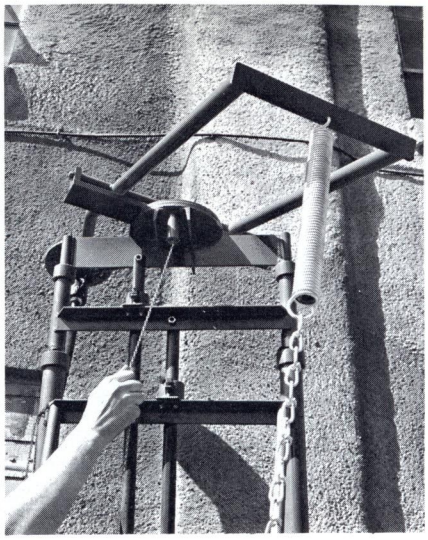
E. A spring arrangement built into the bearing housing (7) supports the grinding disc and absorbs any shocks, thus insuring a smooth finish.

F. A chain (8) is provided to release catch so pivot arm can be turned to grind right up to walls (see illustration).

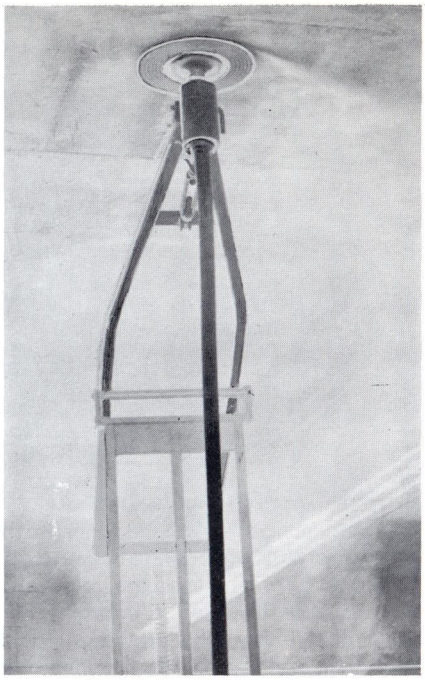
G. WARNING — Before turning the motor on, push up on the pivot arm at (5) so that the disc is not in contact with ceiling. Then apply pressure gradually after motor is on.



CLOSE-UP OF DISC

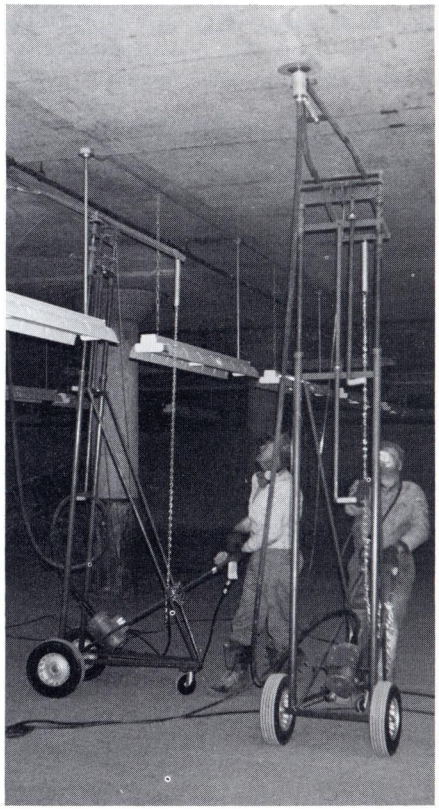


This new attachment which is now standard makes it possible to grind the ceiling right up to the edge of a wall.



A FOG OF CONCRETE DUST

SPEED-CUT WHEEL FOR FINAL FINISHING



Two CG-18 on same job grinding after lights were installed.

THE CG GRINDING WALLS

There are three different ways the CG Ceiling Grinder can be used to grind walls:

1 —Reverse the flexible shaft, end for end, and connect to the motor with a different motor coupling—No. 7810-502—and attach an MB50 handpiece or a Model 50 anglehead to the flexible shaft.

2 —Disconnect the flexible shaft at the motor end and use an 8-foot, 50 tool shaft—No. 6969-513—or a 12-foot, 50 tool shaft—No. 6969-514—and attach an MB50 handpiece or a Model 50 anglehead (see other side).

3 —Remove the motor from the ceiling grinder and attach to a skid base part No. 8616-6 (like the JT-50A grinder) and then reverse the flexible shaft, end for end, and connect to the motor with a different motor coupling—No. 7810-502—and attach an MB50 handpiece or a Model 50 anglehead to the flexible shaft.

STOW
ESTABLISHED 1875

STOW MANUFACTURING CO., 443 State St., Binghamton, N. Y. 13902